

Listing of Claims

1. (Currently Amended) A system, comprising:
a detector to detect a voltage stored in an ultracapacitor; and
an extractor to extract energy from the ultracapacitor ~~when the voltage falls below a predetermined value,~~ the extractor including:
a first amplifier circuit to amplify an output voltage from the ultracapacitor when the detected voltage falls below a first predetermined voltage of a load coupled to the ultracapacitor, the first amplifier circuit to amplify said output voltage independent of a charging operation of the ultracapacitor.
2. (Currently Amended) The system of claim 1, wherein ~~the predetermined value is based on an operating voltage of a load driven by the ultracapacitor~~ the first amplifier circuit is to amplify said output voltage of the ultracapacitor to a level substantially equal to or above the first predetermined voltage during a time when the detected voltage of the ultracapacitor is above a second predetermined voltage of the first amplifier circuit.
3. (Currently Amended) The system of claim 1, wherein the extractor includes a linear regulator to increase voltage output from the ultracapacitor to at least equal the predetermined value, the linear regulator including the first amplifier circuit.

4. (Currently Amended) The system of claim 3, further comprising:
a controller to monitor a change in the increased voltage,
wherein the linear regulator adjusts the changed voltage when the monitored voltage falls below the first predetermined value voltage of the load.

5. (Currently Amended) The system of claim 4, wherein the ~~linear regulator~~ comprises: a first amplifier to amplify the voltage output from the ultracapacitor to a value which at least equals the predetermined value, wherein the controller generates a control signal signals to modify resistance along a feedback path of the first amplifier circuit to maintain ~~amplify~~ the output voltage of the ultracapacitor substantially equal to or above the first predetermined voltage of the load.

6. (Currently Amended) The system of claim 5, ~~wherein the linear regulator~~ comprises further comprising a second amplifier circuit to adjust impedance of the amplified voltage output from the first amplifier circuit.

7. (Currently Amended) A ~~The system of claim 1,~~ comprising
a detector to detect a voltage stored in an ultracapacitor; and
an extractor to extract energy from the ultracapacitor when an output voltage of

the ultracapacitor falls below a first predetermined voltage of a load, wherein the output voltage of the ultracapacitor is coupled to the load and wherein the extractor includes:

a first ~~switched capacitor voltage converter~~ to charge the ultracapacitor to an output voltage during a charging cycle ~~increase voltage output from the ultracapacitor to at least equal the predetermined value,~~

a second capacitor that is to be coupled in series with the first capacitor during a discharging cycle while the first capacitor remains coupled to the ultracapacitor, the second capacitor being charged to a predetermined level based on a sum of a charge stored in the first capacitor and a charge stored in the ultracapacitor during said discharging cycle.

8. (Canceled)

9. (Currently Amended) The system of claim 7, wherein the extractor further comprises ~~comprising: a controller to monitor a change in the increased voltage; and a voltage regulator to adjust the changed voltage to maintain the~~ first predetermined voltage value.

10. (Currently Amended) The system of claim 1, wherein the first amplifier is ~~extractor includes~~ an adiabatic amplifier to amplify voltage output from the ultracapacitor by a predetermined factor.

11. (Currently Amended) The system of claim 10, further comprising:
a controller to monitor a change in the amplified voltage; and
a voltage regulator to adjust the changed voltage to maintain the first
predetermined voltage value.
12. (Original) The system of claim 10, wherein the adiabatic amplifier includes:
at least one transmission gate having an input terminal coupled to the
ultracapacitor and an output terminal to output the amplified voltage.
13. (Original) The system of claim 1, wherein the extractor is a DC-to-DC boost
converter.
14. (Currently Amended) A method, comprising:
detecting a voltage stored in an ultracapacitor; and
extracting energy from the ultracapacitor when the voltage falls below a
predetermined value, said extracting including:
amplifying an output voltage from the ultracapacitor when the detected voltage
falls below a first predetermined voltage of a load coupled to the ultracapacitor, the first
amplifier circuit to amplify said output voltage independent of a charging operation of the
ultracapacitor.

15. (Canceled)

16. (Currently Amended) The method of claim 15, wherein ~~extracting energy includes:~~
~~increasing voltage output from the ultracapacitor to a value which at least equals the operating~~
~~voltage of the load; and driving the load with the increased voltage~~ said amplifying includes:
amplifying said output voltage of the ultracapacitor to a level substantially equal to
or above the first predetermined voltage during a time when the detected voltage of the
ultracapacitor is above a second predetermined voltage of an amplifier circuit that is to perform
said amplifying.

17. (Currently Amended) The method of claim 16, further comprising:
detecting a reduction in the increased voltage over time; and
adjusting the reduced voltage to maintain at least the predetermined load operating
voltage of the load.

18. (Currently Amended) The method of claim 14, wherein said amplifying increasing
~~the voltage~~ is performed by a circuit which includes a linear regulator.

19. (Canceled)

20. (Currently Amended) The method of claim 14, wherein ~~said amplifying increasing the voltage~~ is performed by a circuit which includes an adiabatic amplifier.

21-24 (Canceled)

25. (Currently Amended) A system, comprising:
a load;
an ultracapacitor storing a voltage to drive the load; and
an extractor to extract energy from the ultracapacitor ~~when the voltage falls below a predetermined value, the extractor including:~~
a first amplifier circuit to amplify an output voltage from the ultracapacitor when the detected voltage falls below a first predetermined voltage of a load coupled to the ultracapacitor, the first amplifier circuit to amplify said output voltage independent of a charging operation of the ultracapacitor.

26. (Canceled)

27. (Original) The system of claim 25, wherein the load is at least one of a power supply, processor, cache, chipset, and a memory.

28. (Original) The system of claim 25, wherein the load, ultracapacitor, and extractor are included on a single die.

29. (New) The system of claim 1, wherein the first predetermined voltage corresponds to a minimum operating voltage of the load.

30. (New) The system of claim 30, wherein the second predetermined voltage corresponds to a minimum operating voltage of the amplifier circuit

31. (New) The system of claim 31, wherein the extractor is disabled when a voltage of the voltage source falls below a second predetermined voltage of the extractor.

32. (New) The system of claim 31, wherein the first predetermined voltage corresponds to a minimum operating voltage of the load.

33. (New) The system of claim 32, wherein the second predetermined voltage corresponds to a minimum operating voltage of the extractor.

34. (New) The system of claim 2, wherein the extractor is disabled when the detected voltage of the ultracapacitor falls below the second predetermined voltage of the first amplifier circuit.

35. (New) The system of claim 1, wherein the ultracapacitor is to be coupled to the load along a first signal path when the detected voltage is above the first predetermined voltage and wherein the ultracapacitor is to be coupled to the load along a second signal path passing through the extractor and disconnected from the first signal path when the detected voltage is below the first predetermined voltage.